

SECTION 05310

STEEL DECK

PART 1 - GENERAL

0.1 DESCRIPTION OF WORK

- A.** Work Included: This Section specifies the following items.
1. Roof deck.
 2. Composite floor deck.
- B.** Related Work: The following items are not included in this Section and will be performed under the designated Sections:
1. Section 03300 - CAST-IN-PLACE CONCRETE; concrete fill in metal deck.
 2. Section 05100 - STRUCTURAL STEEL; shop- and field-welded shear connectors.
 3. Section 05500 - MISCELLANEOUS METALS; framing deck openings with miscellaneous steel shapes.

0.2 SUBMITTALS

- A.** Product Data: For each type of deck, accessory, and product indicated.
- B.** Shop Drawings: Show layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.
- C.** Product Certificates: For each type of steel deck, signed by product manufacturer.
- D.** Welder, tack welder and welding procedure qualifications.
- E.** Qualifications of galvanizer and testing and inspection agencies.
- F.** Field quality-control and fire resistance test and inspection reports.

0.3 QUALITY ASSURANCE

- A.** Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel".

- B.** Fire-Test-Response Characteristics: Where indicated, provide steel deck units identical to those tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance Ratings: Indicated by design designations of applicable testing and inspecting agency.
 - 2. Steel deck units shall be identified with appropriate markings of applicable testing and inspecting agency.
- C.** AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members".
- D.** Galvanizer Qualifications: Engage the services of a qualified galvanizer who has demonstrated a minimum of five years experience in the successful application of galvanized coatings specified in this Section in the facility where the work is to be performed.

0.4 DELIVERY, STORAGE, AND HANDLING

- A.** Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B.** Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

0.1 MANUFACTURERS

- A.** Manufacturers: Supply manufactured deck units in accordance with the applicable requirements of the Steel Deck Institute as indicated.

0.2 ROOF DECK

- A.** Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with Steel Deck Institute (SDI) "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and with the following:
 - 1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade G60 zinc coating.
 - 2. Deck Profile and Profile Depth: As indicated.
 - 3. Design Uncoated-Steel Thickness: As indicated.
 - 4. Span Condition: As indicated.
 - 5. Side Laps: Overlapped or interlocking seam at Contractor's option.

0.3 COMPOSITE FLOOR DECK

- A.** Composite Steel Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 30, with the minimum section properties indicated, and with the following:
1. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade 40 minimum, with top surface phosphatized and unpainted and underside surface shop primed with manufacturers' standard gray or white baked-on, rust-inhibitive primer.
 2. Profile Depth: As indicated.
 3. Design Uncoated-Steel Thickness: 0.0358 inch.
 4. Span Condition: As indicated.

0.4 ACCESSORIES

- A.** General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B.** Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C.** Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
- D.** Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- E.** Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- F.** Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile indicated.
- G.** Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck, unless otherwise indicated.
- H.** Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0747 inch thick, with factory-punched hole of 3/8-inch minimum diameter.
- I.** Galvanizing Repair Paint: ASTM A 780.
- J.** Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

0.1 EXAMINATION

- A.** Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

0.2 INSTALLATION, GENERAL

- A.** Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 30, manufacturer's written instructions, and requirements in this Section.
- B.** Install temporary shoring before placing deck panels, if required to meet deflection limitations.
- C.** Locate deck bundles to prevent overloading of supporting members.
- D.** Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
- E.** Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F.** Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G.** Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- H.** Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- I.** Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

0.3 ROOF-DECK INSTALLATION

- A.** Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:
 - 1. Weld Diameter: 3/4 inch, nominal.

2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds 12 inches apart in the field of roof and 6 inches apart in roof corners and perimeter.
- B. Side-Lap and Perimeter Edge Fastening:** Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of 1/2 of the span or 18 inches and as follows:
1. Fasten with a minimum of 1-1/2-inch-long welds.
- C. End Bearing:** Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
- D. Roof Sump Pans and Sump Plates:** Install over openings provided in roof deck and weld flanges to top of deck. Space welds not more than 12 inches apart with at least one weld at each corner.
1. Install reinforcing channels or zees in ribs to span between supports and weld.
- E. Miscellaneous Roof-Deck Accessories:** Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld to substrate to provide a complete deck installation.
1. Weld cover plates at changes in direction of roof-deck panels, unless otherwise indicated.
- F. Flexible Closure Strips:** Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

0.4 FLOOR-DECK INSTALLATION

- A.** Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:
1. Weld Diameter: 3/4 inch, nominal.
 2. Weld Spacing: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches apart, but not more than 18 inches apart.
- B.** Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of half of the span or 36 inches, and as follows:
1. Fasten with a minimum of 1-1/2-inch-long welds.

- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
- D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations, unless otherwise indicated.
- E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

0.5 FIELD QUALITY CONTROL

- A. Testing Agency: The Contractor shall engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare inspection and test reports.
- B. Field welds will be subject to visual inspection.
- C. Testing agency will report inspection results promptly and in writing to Contractor and Engineer.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

0.6 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
- C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

PART 4 - MEASUREMENT AND PAYMENT

0.1 MEASUREMENT

- A. The items below will be measured per square foot complete in place, including all accessories and incidentals.

0.2 PAYMENT

- A.** Payment for the items below will be made at the Contract unit price for the measurement as specified above.

0.3 PAYMENT ITEMS

ITEM NO.	DESCRIPTION	UNIT
0530.300	METAL DECKING	SF

END OF SECTION

NOTES TO THE DESIGNER

- A.** Any request to modify or waive the specification requirements listed below must be approved in writing by the MBTA's Director of Design:

1. None